UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

February 2, 2017

Derek J. Robinson, BRAC Environmental Coordinator
Department of the Navy
Base Realignment and Closure Program Management Office West
33000 Nixie Way, Building 50
San Diego, CA 92147

Re: EPA Comments on the Draft Management and Monitoring Approach Sampling and Analysis Plan for Basewide Groundwater Monitoring Program, Hunters Point Naval Shipyard, San Francisco, California, December 2016

Dear Mr. Robinson:

Attached are EPA's comments on the Draft Management and Monitoring Approach Sampling and Analysis Plan for Basewide Groundwater Monitoring Program, Hunters Point Naval Shipyard, San Francisco, California dated December 2016.

If you have any questions, please do not hesitate to call me at (415) 972-3681 or e-mail me at huang.judy@epa.gov.

Sincerely,

Judy C. Huang, P.E.
Remedial Project Manager

cc:

Nina Bacey, DTSC
Tina Low, RWQCB
Amy Brownell, SFDPH

USEPA Review of the Draft Management and Monitoring Approach, Sampling and Analysis Plan for Basewide Groundwater Monitoring Program, Hunter's Point Naval Shipyard, San Francisco, California, December 2016

GENERAL COMMENTS

1. The Draft Management and Monitoring Approach Sampling and Analysis Plan for Basewide Groundwater Monitoring Program, Hunters Point Shipyard, San Francisco, California, dated December 2016 (SAP) states that it is a "continuation of previous BGMP SAP [Basewide Groundwater Monitoring Program Sampling and Analysis Plan] (CE2-Kleinfelder Joint Venture 2011) and associated amendments". It is unclear to EPA what does "continuation" mean and where does this draft SAP fit in the Hunters Point groundwater monitoring program. Please modify the draft SAP to clarify 1) if this draft SAP replaces the previous groundwater monitoring SAP and its amendments at Hunters Point or 2) if this is an amendment to the previous SAP and its amendments. If this draft SAP is intended to amend the previous SAP and its amendments, please also include by reference the previous the SAP and its amendments.

2. The draft SAP is inconsistent with respect to the regulatory agencies' role in reviewing and approving modifications to sampling locations, analytical requirements, and sampling frequencies. Please modify the draft SAP to consistently state that any future modifications to sampling locations, analytical requirements, and sampling frequencies will be presented to the regulatory agencies for review and approval.

3. The draft SAP does not follow the *Uniform Federal Policy for Quality Assurance Project Plans Manual,* dated March 2005 (UFP QAPP Manual) format, and does not present all of the required information as specified in the *EPA Requirements for Quality Assurance Project Plans,* March 2001 (EPA QA/R-5). Examples of the insufficiently detailed and/or missing information are as follows:

a. The SAP distribution list has not been included.
b. The draft SAP does not include any special training or certification requirements for project management or field sampling personnel.
c. The communication pathways and modes of communication that will be used (e.g., for corrective actions, SAP changes in the field, etc.) during the project are not discussed. Further, the draft SAP does not indicate that regulatory agencies will be notified of significant corrective actions or when changes to the SAP occur.
d. The draft SAP does not present standard operating procedures (SOPs) to support the proposed field tasks.
e. The testing, inspection, maintenance, and calibration requirements of both field and laboratory instruments/equipment has not been provided, nor has the instrument calibration acceptance criteria.
f. Measurement performance criteria are not provided for the proposed analytical methods and analytes.

g. The draft SAP does not discuss how the data quality indicators (DQIs) (e.g., precision, accuracy, representativeness, completeness, comparability, and sensitivity) will be calculated and/or assessed.

The draft SAP should be revised so that it follows and includes all applicable elements of the UFP QAPP Manual, or so that it references an approved QAPP for the missing information. Note that if an element of the UFP QAPP Manual is not applicable to this project, the draft SAP should be revised to specifically state this. Please revise the draft SAP to include all applicable elements of the UFP QAPP Manual, or to specifically reference an approved QAP for the missing information.

4. The draft SAP does not provide all of the necessary laboratory information. The laboratory SOPs have not been provided for the proposed methods. Without this information, the adequacy of the laboratory methods cannot be evaluated and the information in the SAP cannot be verified. In addition, the laboratory statistically derived quality control (QC) limits are not provided for all proposed analytes and methods (i.e., to ensure the laboratories can meet the proposed measurement performance criteria). Further, SAP Section 5.3 states that groundwater samples will be analyzed by EMAX Laboratories, Inc. and GEL Laboratories, Inc.; however, GEL Laboratories is not included in the organization chart in SAP Section 1.1, contact information has not been provided for either laboratory, and it is unclear what analyses each laboratory will perform. Please revise the draft SAP to provide all necessary laboratory information including the laboratory SOPs, statistically derived QC limits, and contact information.

5. It is unclear why current isoconcentration and potentiometric surface maps are not included in the draft SAP. Section 3.5, New BGMP Revisions, presents numerous changes to the monitoring program "to optimize and align the program with the current monitoring goals and contract changes." However, data and figures are not presented in the draft SAP to support the proposed changes. In addition, references to documents that may provide the supporting information and/or regulatory approvals of these changes are not provided. Please revise the draft SAP to provide current isoconcentration and potentiometric surface maps to support the changes to the monitoring program outlined in Section 3.5, and to allow independent review of these changes. If any of the changes were previously approved and/or are supported by historical documents, please provide reference to these documents.

6. It is unclear during which quarter(s) of the year semiannual and annual sampling will be conducted, as this is not specified in the draft SAP. Therefore, it is unclear if samples will be collected at an optimal time. Please revise the draft SAP to specify the quarter(s) in which sampling will be conducted at each parcel, and provide justification for the selected quarters (e.g., citing historical data trends, seasonal trends, etc.).

7. Review of the draft SAP indicates that it lacks standard operating procedures (SOPs) to support the field tasks described in the draft SAP. Applicable SOPs may include, but are not limited to, groundwater sampling procedures, groundwater elevation monitoring procedures, equipment decontamination procedures, investigative-derived waste management procedures, chain-of-custody and sample handling procedures, and/or field

documentation procedures. Revise the draft SAP to provide applicable SOPs to ensure appropriate implementation of all procedures by the field team.

8. The draft SAP does not discuss manual integrations. Please revise the draft SAP to ensure that if manual integration is required, the supporting information (i.e., chromatograms before and after manual integration, as well as a brief explanation for the manual integration) will be included in the data package deliverables and evaluated during data validation.

9. The draft SAP does not contain data validation checklists. Instead, the draft SAP references multiple guidance documents when discussing how data will be qualified. For each analytical method, a data validation checklist describing how samples will be qualified (i.e., when samples will be qualified estimated/rejected, and if individual or all samples in a batch will be qualified) should be provided. Please revise the draft SAP to provide the data validation checklists.

10. Project action limits (PALs) are not available for several of the proposed analytes listed in draft SAP Appendix B (e.g., volatile degradation products as noted on page 48), and it is unclear how these analytes will be assessed. While an explanation is provided in some cases (e.g., natural attenuation parameters), the SAP should discuss how all analytes without PALs will be assessed. Please revise the draft SAP to discuss how analytes without PALs will be evaluated.

11. The PALs for several analytes are less than their limits of quantitation (LOQs) (e.g., trans-1,3-Dichloropropene, Appendix B, page 11), but the draft SAP does not discuss the uncertainty in using data where the PAL is less than the LOQ, and if this level of uncertainty will allow project data quality objectives (DQOs) to be met. Please revise the draft SAP to discuss the uncertainty in assessing results below the LOQ when the PALs are less than the LOQs, and explain if this uncertainty will meet the DQOs.

12. The data management discussion is insufficiently detailed. For example, it is unclear where hardcopy project documents will be stored (i.e., the SAP should provide an address), who will manage them, and where the project database will be maintained. It is also unclear how long these documents and the database will be stored before archival/disposal. Lastly, it is unclear how analytical data will be entered into the database, if the entry will be reviewed, and how data qualifiers will be added to the final reports. Please revise the draft SAP to provide greater detail regarding the data management for this project.

13. The draft SAP indicates that 80 percent of the data will be validated at Level III and 20 percent will be validated at Level IV, but it is unclear what will be included in each level of validation or how data will be selected for each level of validation (e.g., randomly). Please revise the draft SAP to indicate how data will be selected for Level III and Level IV validation. Please also revise the draft SAP to specify what is included in each level of validation.

14. Analytical methods are inconsistently presented in the draft SAP in four instances. First, Table 1 indicates that methyl mercury is analyzed by Method EPA 1630E, but Appendix B and Appendix C both list Method EPA 1630. Second, Appendix C lists the method for chemical oxygen demand as EPA SM5220, but Table 1 and Appendix B list the method as EPA SM5220D. Third, Table 1 lists the analytical method for Plutonium-239 as HASL-300 Pu-11; however, Appendix B lists this method as HASL-300 Pu-10, and Appendix C indicates that Plutonium-239 is analyzed by a 900 Series method. Finally, Table 1 indicates that silica is analyzed by Method 6010B, but Footnote 4 on page 31 of Appendix B indicates that silica is analyzed by Method 6020A. Please revise the draft SAP to ensure that analytical methods are consistently presented.

SPECIFIC COMMENTS

1. **Executive Summary, BGMP Goals, Page ES-1, and Section 1.1, Organization and Purpose, Page 1-1:** Parcels UC-1 and UC-2 have been transferred to the City and County of San Francisco, however, the SAP does not clarify that the Navy retained the responsibility for groundwater sampling at Parcel UC-2. While this is discussed in Section 4.4, DQO Step 4. Define the Boundaries of the Study, this should also be explained in the Executive Summary and Section 1.1. Please revise the draft SAP to explain that the Navy retained the responsibility for sampling the wells in Parcel UC-2.

2. **Executive Summary, Dynamic Work Strategy, Page ES-2:** This section indicates that future changes to the monitoring program will be presented to the regulatory agencies in the form of an optimization memorandum, and that "significant changes to the sampling program will be discussed and reviewed with the regulatory agencies." It is unclear what constitutes a "significant change" to the sampling program, as this is not specified. Please revise this section to clarify which types of changes will be discussed with the regulatory agencies and which will not.

3. **Section 3.1, Monitoring in Support of RAOs Documented in RODs, Page 3-1:** The monitoring frequency for Parcel E-2 landfill wells is not presented consistently. This section indicates that the sampling frequency for the Parcel E-2 landfill "will be based on access and availability" due to ongoing remedial actions. However, Table 2, Rationale for Well Sampling, Target Analytes, and Sampling Frequency, indicates that monitoring is to be conducted semiannually. Please revise this section to indicate that while access and availability may impact the sampling frequency at the Parcel E-2 landfill, attempts will be made to sample at least semiannually.

4. **Section 3.1, Monitoring in Support of RAOs Documented in RODs, Page 3-2:** The third paragraph on this page discusses criteria for removing wells from the sampling program; however, the text does not acknowledge the potential need to replace wells that may be found to have insufficient water for sampling or are dry. Further, if contaminant plumes are found not to be stable (i.e., are migrating) or if groundwater flow directions change, additional wells may be needed. Wells may also need replacement if they are found to be damaged. The potential need for additional or replacement wells should also be discussed in this section. Please revise Section 3.1 to discuss the criteria that may be

used to evaluate the need to replace and/or add wells to the monitoring program in addition to removing wells.

5. **Section 3.5, New BGMP Revisions, Page 3-4:** The revision regarding NAPL is inconsistent with the recommendations in the most recent Semiannual Groundwater Monitoring Report (July – December 2015), dated December 2016 (GWMR). The second bulleted item on this page states that NAPL monitoring at Parcel E has been temporarily suspended from the BGMP, and that "NAPL has been adequately characterized and further NAPL monitoring is not recommended until after remediation." However, it is noted that the Navy proposed no revision to the NAPL monitoring program in Section 3.10, NAPL Measurements and Table 3-6, NAPL Measurements (4Q2015) of the GWMR). In addition, no data are presented in the draft SAP to support the conclusion that NAPL has been adequately characterized. As such, the basis for this decision is unclear. Please revise the draft SAP to provide additional information to support the proposed revision to the NAPL monitoring program for Parcel E.

6. **Section 3.5, New BGMP Revisions, Page 3-4:** The second bulleted item on this page recommends the removal of 12 wells from the NAPL monitoring program at Parcel E; however, Section 3.10, NAPL Measurements, and Table 3-6, NAPL Measurements (4Q2015), of the GWMR indicate that 8 wells are measured for NAPL at Parcel E. It is unclear why more wells than are currently being measured are recommended for removal from the NAPL monitoring program. Please revise the draft SAP to explain this discrepancy.

7. **Section 3.5, New BGMP Revisions, Page 3-4:** It is unclear if the recommendation for removing wells IR01MW402A and IR01MW403A at Parcel E-2 is appropriate because the draft SAP does not include sufficient information. The fourth bulleted item on this page states that wells IR01MW402A and IR01MW403A at Parcel E-2 will be removed from the monitoring program, as concentrations of contaminants and background compounds "have exhibited stable trends." However, review of the GWMR indicates that ammonia was recently detected in well IR01MW402A at a concentration (151.2 micrograms per Liter [ug/L]) that exceeds the Trigger Level of 25 ug/L. It is unclear if this concentration is consistent with historical detections, or if this is an anomaly that warrants further monitoring. Please revise the draft SAP to discuss ammonia in IR01MW402A and provide further justification for the removal of wells IR01MW402A and IR01MW403A from the monitoring program.

8. **Section 3.5, New BGMP Revisions, Page 3-4:** Additional information is needed to support the fifth bulleted item on this page, which states that the monitoring frequency of all wells at Parcel E has been revised from semiannual to annual, as "no final CERCLA document specifies semiannual monitoring at the parcel and an annual monitoring frequency currently meets monitoring objectives." However, no data or discussion (e.g., contaminant concentration trends, a discussion of seasonal variability in data, etc.) are presented to support the conclusion that an annual monitoring frequency will meet monitoring objectives. Revise the draft SAP to present data and analysis that supports this revision to the monitoring program.

9. **Section 4.2.1, Goal 1: Monitoring to Support RAOs Documented in the RODs, Page 4-10:** This section states that nine wells are monitored at Parcel B-1; however, Table 2, Rationale for Well Sampling, Target Analytes, and Sampling Frequency, lists only six wells as being monitored. Similarly, this section states that 17 wells are monitored at Parcel B-2; however, Table 2 lists only ten wells as being monitored. There are also discrepancies between the number of wells proposed for monitoring in Table 2 and the number specified in the text for Parcels C, E, and E-2. Please revise the draft SAP to address discrepancies between the number of wells specified for monitoring in Table 2 and the text.

10. **Section 4.5.1, Goal 1: Monitoring to Support RAOs Documented in the RODs, Page 4-14:** This section indicates that statistical analysis of contaminant trends will be conducted; however, the text does not clarify if short-term trends, long-term trends, or both, will be evaluated. It is noted that both short-term (i.e., data from the most recent four to six sampling events) and long-term trends should be evaluated. Please revise this section to specify evaluation of both short-term and long-term trends.

11. **Section 4.6, DQO Step 6. Specify the Performance or Acceptance Criteria, Pages 4-15 to 4-16:** Step 6 of the Data Quality Objectives (DQOs) is insufficiently detailed. Step 6 of the DQOs should specify the decision rules, which may include a statistical hypothesis and all applicable statistical tests. Step 6 should also examine consequences of making incorrect decisions from the test, and place acceptable limits on the likelihood of making decision errors. Please revise Step 6 to follow EPA's Guidance on Systematic Planning Using the Data Quality Objectives Process (QA/G-4).

12. **Section 5.1.1, Field Tasks, Page 5-1:** This section states that groundwater elevations will be measured using datalogging pressure transducers; however, it is noted that it is standard industry practice to collect a manual water level measurement when water level data is downloaded or when the transducer is removed from the well to replace the battery. This is necessary to confirm that errors have not accumulated in the transducer measurements. Please revise the text to require manual water level measurements be collected under these circumstances, and revise the draft SAP accordingly.

13. **Section 5.1.2, Sample Analysis Tasks, Page 5-2; Section 5.2.1, Groundwater Sampling, Page 5-4; and Section 5.2.1.1, Sampling with Snap Samplers, Page 5-5:** The SAP indicates that water quality data (e.g., temperature, oxidation-reduction potential, pH, dissolved oxygen, specific conductivity, etc.) will not be collected from wells with Snap Samplers, but there are circumstances when water quality parameter data should be collected. For example, water quality data is required to monitor whether conditions are suitable for monitored natural attenuation (MNA), during MNA, and during in-situ remediation (e.g., in Parcel C treatment areas). Therefore, collection of these data may be warranted, but it is unclear how this data will be obtained from wells with Snap Samplers. It is noted that one possible solution is to use a downhole transducer to obtain this data while the Snap Sampler is being retrieved and reset with sampling bottles. Alternatively, a pressure transducer that is being used to monitor water levels could be replaced with one that also monitors water quality parameters. Please revise the draft SAP to clarify how water quality data will be obtained from wells with

Snap Samplers when collection of this data is necessary.

14. **Section 5.1.6, Assessment/Audit Tasks, Page 5-3:** The discussion of assessment/audit tasks does not include an assessment schedule, nor does it identify the person/organization responsible for performing the assessment, the person/organization responsible for responding to any audit findings, or how corrective actions will be implemented and verified. Further, it is unclear if an audit report will be prepared. Please revise the draft SAP to provide greater detail regarding the assessment/audits that be conducted during this investigation.

15. **Section 5.1.7, Data Review Tasks, Page 5-3:** This section indicates analytical data usability will be assessed in a Quality Control Summary Report, but the discussion of data usability is insufficiently detailed. For example, this section does not indicate that significant trends and biases in the data will be evaluated and discussed in the usability assessment. Also, the contents and level of information to be provided in the Quality Control Summary Report are not specified. Please revise the draft SAP to indicate what will be included in the Quality Control Summary Report, and ensure that it will include a detailed discussion of all data quality indicators, as well as an assessment of trends and biases in the data, along with sufficient information to support the data usability conclusions.

16. **Section 5.2.1.1, Sampling with Snap Samplers, Page 5-5:** The last sentence on this page states that collection of water quality data at wells with Snap Samplers is not necessary; however, as noted in the previous comment, collection of water quality data is necessary for wells in plumes where in-situ remediation is being conducted (i.e., at Parcels B-2 and C, and Parcel E in the future) or where MNA is ongoing (i.e., likely in the future as VOC concentrations in plumes are reduced). Please delete this sentence.

17. **Section 5.2.1.1, Sampling with Snap Samplers, Page 5-5:** The section indicates that hydrochloric acid will be added to samples as a preservative, where necessary (i.e., in wells with basic pH); however, the SAP should include a list of wells with basic pH so that the field team does not add acid to these samples. Please revise the draft SAP to include a list of wells with basic pH.

18. **Section 5.2.1.2, Installation of Dedicated Pumps for Groundwater Purging and Sampling, Page 5-6:** This section states that pumps will be installed in the middle of the saturated screened interval, at depths based on recent historical water levels; however, the draft SAP does not provide the screen interval depths or recent historical water levels for each well. For clarity, please revise the draft SAP to include a table which specifies the screen interval depths and recent historical water levels for each well such that the SAP can be implemented by the field team.

19. **Section 5.2.1.3, Purging and Sampling Groundwater Monitoring Wells Using Low-Flow Method, Pages 5-6 through 5-8:** Low-flow purging and sampling methods are presented in Section 5.2.1.3; however, this section does not reference U.S. EPA's Low Street (Low Flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells (EQASOP-GW 001; January 19, 2010) (Low Flow

Guidance). Please revise the draft SAP to reference the Low Flow Guidance and ensure that the procedures presented in Section 5.2.1.3 are consistent with this guidance.

20. **Section 5.2.1.3, Purging and Sampling Groundwater Monitoring Wells Using Low-Flow Method, Pages 5-7 and 5-8**: Item 15 indicates that Oxidation Reduction Potential (ORP) and turbidity will be used as stability parameters; however, the paragraph after this list states that ORP and turbidity will not be used as stability parameters. While turbidity may be problematic and stability should not be based on this parameter, ORP should be used as a stability parameter. Please revise the draft SAP to address this discrepancy and ensure that ORP is used as a stability parameter.

21. **Section 5.2.4.2, Water Level Meter Method, Page 5-14:** The text does not specify that multiple manual depth to water measurements should be collected to avoid measurement error. It is noted that water level measurements should be collected at least three times in succession or until two successive measurements are identical to avoid measurement error. Please revise this section to require collection of multiple water level measurements to minimize the potential for measurement error.

22. **Section 5.2.7, Investigation-Derived Waste, Page 5-16:** The investigation-derived waste (IDW) management procedures lack sufficient detail. For example, the number of water and solid samples to be collected and analytical suite(s) are not specified. Please revise the IDW management procedures to provide sufficient detail to allow proper implementation of the SAP by the field team.

23. **Section 6.2, Data Validation, Page 6-1:** This section does not indicate what will be included in the data validation report. Please revise the draft SAP to ensure that the data validation report will present a discussion of all QC parameters evaluated, the acceptance criteria used to evaluate each QC parameter, a list of all QC exceedances as well as the extent of the exceedance, the samples associated with each exceedance, and the qualifiers applied.